Creating A Sustainable, Student-Run Campus Farm at Ball State University

An Honors Thesis (HONR 499)

by

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Abstract

This research paper promotes the beginning of a student-run farm on the campus of Ball State University. A farm takes a large amount of planning and dedication. To help create plans for what Ball State University's future farms can become, I looked into what successful student farms around the United States have accomplished, and how they've accomplished such feats. Sustainable farms are not only of interest to students and institutions, but of the community as well. The research ranged from schools solely growing produce, to those utilizing composting and raising livestock as well. A farm may have to start small, but there is no limit to the potential for the future. Key factors researched in creating a farm included funding, maintenance/workers, and encouraged participation from all members of the community. After researching a wide variety of current university farm and garden initiatives, I recommend starting small, build a regional coalition to work on the proposal, secure funding, involve students in the planning process and document the steps and build an archive for the future.

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Introduction

The sustainability movement is a trend quickly spreading to all manners of society, helping to make the environment a healthier, greener place globally. In this essay, I define sustainability as the growth and use of renewable resources, utilized in a means that allows for continuation of growth and use for the future. Recently, sustainable practices have significantly grown, becoming a more prominent part of society, intermingling economic, environmental, and social dimensions to promote a high quality of life (Ralph & Stubbs, 2014). According to the Association for the Advancement of Sustainability in Higher Education [AASHE], there were more than 100 campus gardens in North America devoted to sustainability as of 2010 (Valluri, 2010). Within the past five years since this census was taken, more colleges have built campus gardens to educate not only the students, but also the community. In fact, even before the census was taken, over 300 higher education institutions in over 40 countries had signed the Talloires Declaration (Parker, 2007). The Talloires Declaration in a ten-point action plan signed by university presidents in that they promised to make a commitment to environmental sustainability in their institutions.

The implementation of sustainable agriculture can, and will, have a multitude of benefits for the environment and the local community. Sustainable agriculture not only correlates with food products, but also other forms of plant and animal life that can protect both the environment as well as public welfare (Valluri, 2010). Farms that are sustainable refrain from utilizing toxic pesticides and synthetic fertilizers. This helps to reduce the degradation of natural resources to create healthy ecosystems. Sustainable gardens can help eliminate use of waste and pollution, as well as often harmful toxins provided by Concentrated Animal Feeding Operations [CAFOs]

(Valluri, 2010). Many colleges and universities are addressing sustainability in creative ways that attract larger audiences. These include film festivals, speakers, and social campus events (Rowe, 2007). Sustainability majors are beginning to be offered at many universities. Universities without specific sustainability majors may still have courses adapted to sustainability within their core requirements. Research indicates that universities play a significant role promoting a sustainable society by promoting practice, research, and building future community leaders who are passionate about the subject (Ralph & Stubbs, 2014).

Many environmental interest groups, community leaders, and even restaurants have taken a huge interest in creating a sustainable environment. Every effort can help to create awareness, as well as spark interest in the movement, and recruit more sustainability volunteers. One of the greatest tools to inform people with new practices is higher education. Colleges and universities not only have the ability to shape minds, but they have the resources to make a lasting impact. A campus farm will allow students from multiple disciplines to come together for a common purpose. A campus farm, however, cannot be implemented in the matter of a few months; a great deal of planning is involved. Where to start the garden, how the garden will be funded, who will till and maintain the land, and who will cultivate the produce are all questions that must be considered. To ensure sustainability initiatives on campus are successful, it is important to have the proper planning. We must first look into what Ball State University [BSU] has previously attempted in the past so that plans for the future, which includes a sustainable campus with a student farm, are up-to-date and does not replicate unsuccessful prior attempts. Then, we must look into what other schools have accomplished, and what has made each individual school successful.

For the purpose of this paper, the United States will be divided into four regions: Northeast, South, West, and Midwest. Colleges and universities across the country can provide details such as: where the funding is coming from, how much land is provided for the garden, and how the garden is maintained. Colleges and universities located in the Midwest, specifically, can give insights on what produce to grow and how to maximize production during the growing season. Finally, after analyzing both BSU's past initiatives as well as colleges and universities around the country, this paper can provide insights for future planning efforts to initiate a gardening project on Ball State University's campus.

Literature Review (existing school gardening/farming programs)

In *The Mixed Political Blessing of Campus Sustainability,* Sheryl D. Breen makes a compelling argument for both the pros and the cons of creating a greener, more sustainable environment (Breen, 2010). On the one hand, Breen argues a significant barrier to implementing campus sustainability is faculty involvement. Most faculty already work long hours, and are concerned with a set curriculum

Breen furthers her argument to show that institutions are barely challenging the barriers to which they can improve sustainability. There are many college campuses throughout the United States, and even worldwide, claiming to be devoted to a greener living. However many of these schools do not utilize their greater potential. They do the bare minimum to feel they are making an improvement in society by only having a recycling program, or certain light bulbs, yet still allow outsiders to believe far more is being completed.

This is not to say all colleges are not doing their part to become green. Although some are not striving to their greatest potential, Breen explains that many institutions are implementing greener buildings, carbon management, and even reduced fossil fuels. Twenty years before

Breen wrote her paper, David Orr wrote a paper *The Problem of Education* (Orr, 1992) in which he connects those in higher education as being the individuals who possess a greater understanding of the importance of green campuses. The faculty has the knowledge and understanding to make and impact on the students, they just need to find the time and motivation to do so. The schools found as noteworthy in their green education are no longer affluent schools, but now range from community college to Ivy League. Much of this has to do with the American College and University Presidents' Climate Commitment (Breen, 2010). This led the pledges of nearly 700 college and universities leading their campuses toward carbon neutrality. The effect of this pledge is that all the campuses will take action and report their carbon usage, as well as implementation to help encourage other institutions.

Breen also notes that many campuses are taking their sustainability efforts from implementation to education. Starting around 2005, degrees, as well as certificate programs, started to become available for students to obtain. The numbers since have just continued growing. Grant programs have also helped to ensure a movement forward for the sustainability efforts on many campuses. Some of these may include utilizing a food service company devoted to local food sales, or even starting their own campus farm-to-fork cafeterias.

The problem Breen pointed out is that colleges still are not doing as much as they can to help the sustainability movement. In 2010, the Association for the Advancement of Sustainability in Higher Education (AASHE) created a rating system for institutions to self-evaluate their progress, as well as compared their performance to other institutions. Many organizations, conferences, and journals have also started making a presence, encouraging the forward movement in sustainability.

An issue that Breen closes her argument with is the definition of sustainability. It is clear sustainability can be used in multiple environments with different connotations. Some consider their efforts to be sustainable, when they are not doing much to help the environment at all. Breen argues that sustainability goes beyond the generic ideal of environmental issues related to pollution and preservation (Breen, 2010). Sustainability also relates to the issues brought up by the environment through poverty, health care, workers' rights, and class and race based toxic hazards. An accepted definition of sustainability is: the necessary and difficult struggle to find a balance between competing legitimate claims for economic growth, environmental health, and social justice (Barlett, 2008). This larger meaning of sustainability opens many new doors for institutions to take action.

Similar to Breen, Debra Rowe makes a compelling examination of sustainability within college campuses in her paper *Education for a Sustainable Future* (Rowe, 2007). Rowe also makes note to the trend of campuses integrating sustainability into curriculum and their mission statements, as well as student and community life. There are numerous ways in which campuses encourage sustainability efforts. Some examples include: guest speakers, film festivals and sustainability requirements in the core curriculum.

Just as Breen mentioned, Rowe records the integration of specialized degrees regarding sustainability. She even points out that some organizations are promoting the education of sustainability starting in kindergarten and continuing on through high school. Some of these programs are not advertised as sustainable; however, the requirements for a sustainability education are included. Architecture and engineering schools are some of the most common schools with accreditation for sustainable criteria. There has even been a call for higher education to require all undergraduates to have a form of sustainability education. A Campus

Climate Challenge began to measure and reduce greenhouse gas emissions (Rowe, 2007). As of 2007, there were students in over 400 campuses committed to changing energy policies.

Rowe informs the reader that campuses are among the most financially eligible to purchase environmental products and help promote the sustainability movement. Eventually this will lead to sustainable buildings and practices all over the campus and surrounding community. The United Nations declared a *Decade of Education for Sustainable Development* as an effort for higher education in the United States to start sustainable education even with the absence of governmental support (Breen, 2010; Rowe, 2007). The AASHE can help the colleges and universities to create sample syllabi showing the integration of sustainability into courses.

Rowe takes this information and argues that textbooks should begin to describe sustainability challenges to help build solutions. Students can then learn through their assignments how to be more responsible for a sustainable future. If students understand the positive impact they can have on their environment and the surrounding community, they can have a huge impact on the world. Sustainability education cannot begin at the college level. To have maximum efficiency, education about sustainability must start at the kindergarten level, and continue on through college.

Although it's true that sustainable education should begin at an early age, colleges and universities have the greatest influence within communities. In *Integrating environmental sustainability into universities*, Meredith Ralph and Wendy Stubbs note that higher education involvement can have long-lasting social and environmental changes (2014). Through research, practice, and education, universities effect today and the future. As Rowe and Breen both mentioned, the most imperative way to implement sustainability is to incorporate the skills and knowledge into the curriculum. Eventually, if sustainability is incorporated into all facets of

education, it will become a commonality of daily life. Sustainability, when balanced correctly, can readily become intermingled with all aspects of a quality life.

There is a problem regarding the integration of sustainability into core curriculum. It is easier for a campus to become green than it is to integrate the concepts into learning objectives. The Stockholm Declaration, which began in 1972, called for a need for environmental education within higher education. The Talloires Declaration followed this in 1990 with the commitment to stabilize human population and adopt agricultural practices for a sustainable future (Parker, 2007). The Kyoto Declaration of 1993 and United Nations Earth Summit are also movements that helped lead to the Decade of Education for Sustainable Development (Ralph & Stubbs, 2014). All the mentioned programs have been utilized at both an organizational and a national level. The Decade of Education for Sustainable Development has the intention to integrate the values, as well as the practices, of sustainable development into education on all levels (Parker, 2007). This will help to encourage economic behavior among students that will implement a sustainable future for generations to come.

There are many other barriers to creating a sustainable environment (Ralph & Stubbs, 2014). Many of these challenges are internal issues. Creating sustainable systems costs money, and there are many programs all competing for university funding. Many university budget plans also do not incorporate a budget for sustainability projects. Still today, some members do not understand the importance of campus sustainability. Half the struggle is to explain why a sustainable system is of high importance. Even when a sustainable program is implemented, it can be difficult to keep interest in it. Ideas can have value, but a commitment by faculty, staff, and students is important to have a successful program and integrate it into curriculum.

Planning on all levels needs to be in order and cooperative for a sustainability project to be successful. Ralph and Stubbs deducted that universities need to create a multi-faceted approach to integrating environmental sustainability on campus, and their local government must support it (Ralph & Stubbs, 2014). They found that creating a program of sustainability would include: "develop national policies by government to support universities' integration; target funding for the necessary resources to integrate sustainability into curriculum; engage leaders and support within the university and community; and provide the necessary training and skills for leaders to improve their understanding. A sustainability program needs to be thoroughly planned out (Ralph & Stubbs, 2014, p.87)". It can take years to implement a successful program, however, with the right motivation all universities can achieve this goal.

Peggy F. Barlett takes a different approach to the way she views sustainability efforts with *Reason and Reenchantment in Cultural Change* (2008). She mentions the phenomena of reenchantment: "the sensory, emotional, and non-rational ways of connection with the earth's living systems (Barlett, 2008, p. 1077)." The comprehension of reenchantment will enhance the understanding of individuals' abilities to make a change. The Piedmont Project aims to focus on reenchantment at Emory University by creating a faculty development program to enhance sustainability across all curriculums (Barlett, 2008). Students will be able to learn about sustainability through courses not generally associated with the efforts. This may include, but is not limited to history, chemistry, public health, religion, sociology, the arts, law, and even literature.

Reenchantment will expand the knowledge of the relationship with the natural world, reconnecting individuals to living earth. The sooner institutions recognize their potential for the impact they can make on both local and regional sustainability policies, the sooner sustainability

ideals will spread. Barlett also recognizes the disengaged attitude of some students, staff, and faculty towards sustainability. Although this is not necessarily true with all members of the university community, the few that have their reservations about the project can become the individuals preventing growth. Once these individuals realize their potential to make change, the foundation for a program will begin to emerge. Most, however, do not appreciate change; many are afraid of change. The challenge is convincing participants to accept change, giving a new perspective of how sustainability will change campus life. The faculty is one of the most difficult groups to convince to make change (Barlett, 2008). Faculty involvement in the university already includes workload, time constraints, and high academic expertise. A focus on sustainability may increase their workload. This is why Barlett suggests the Piedmont Program, which includes sustainability into current curriculum; therefore, extra effort is not required. A sustainable development program will allow a multitude of campus groups to interact for a common goal. This will incorporate numerous social institutions, religions, and technologies to create the appropriate program for each individual institution.

Since sustainability has gained popularity, Sungchul Choi notes in *Environmental and Economic Dimensions of Sustainability and Price Effects on Consumer Responses* that consumers are more favorable to those with initiatives toward social responsibility (2011). If institutions create promising sustainable practices, students may be drawn to these establishments. The notoriety of the program may draw in more grants and government funding. Choi notes that sustainable development will not only help to enhance present needs, but also meet the needs for generations to come. There are multiple dimensions to sustainability, including economic, environmental, and social domains: together known as the triple bottom line.

All the aforementioned authors note the need for sustainable development. The planning process is grueling and time consuming. Although a plan cannot be created overnight, and may include years of planning and cooperation, it is achievable for any and all higher education facilities. Sustainability does not stop us from exhausting all our resources, however it can drastically prolong the degradation of the environment for generations to come by utilizing greener practices.

Previous Ball State University Initiatives

Ball State University (BSU) is no stranger to sustainability efforts. One of the most prominent sights for new students upon entering the campus is the numerous recycling bins campus wide. Alongside every trashcan, and even sometimes standing alone, students can find a recycling bin distinguished by a blue can liner. In 2002, BSU adapted a Sustainability Statement, which outlines the university's vision, as well as commitment, to encouraging sustainability across campus and throughout the Muncie community ("University Sustainability Statement,"). The statement was adopted by the Council on the Environment [COTE] in 2002 and officially accepted by the board of trustees in the beginning of 2003. There are five fundamental principles outlined in the Sustainability Statement:

> Incorporate environmental concerns as a significant priority in university decision-making, seek alternative practices and procedures to minimize negative impacts on the environment, conserve natural resources and restore environmental quality, protect the biodiversity of our region and serve as a living laboratory and habitat for local species, and consider the social, economic, and environmental impacts of Ball State University's operational policies and foster a participatory process in developing these policies ("University Sustainability Statement,").

The university made these decisions based on their strategic plans, as well as BSU's mission statement. BSU plans on utilizing sustainability practices as an evolving process, adapting

wherever it can be found necessary. Beginning in the spring of 2012, BSU started its geothermal project ("Environmental Commitment, Geothermal, Going Geothermal – Ball State University"). When completed, this project will be the largest geothermal energy system in the nation. This project will allow for BSU to be able to discontinue use of all the boilers, resulting in annual savings of $2 million, and a nearly halved carbon footprint. The project coincides with an interdisciplinary conference –Greening of the Campus IX: Building Pedagogy—which allows representatives from different colleges within the university to share their thoughts and ideas towards improving environmental issues.

In the summer of 2014, the first on-campus garden was attempted at BSU (J. Lewis, personal communication, February 20, 2015). On a plot of land near Carmichael Hall, a graduate student worked on a garden in which carrots and cherry tomatoes were planted. BSU's dining services provided the seeds for the project, and the facilities team worked to till the land to begin the project. Unfortunately, due to a lack of communication, the carrots were placed on high mounds and the cherry tomatoes in the trenches, resulting in the carrots not being able to grow properly. This type of project also consisted of a workload intended for multiple people, not a single graduate student. Due to the lack of workers, the plot eventually became abandoned and overgrown, resulting in the loss of all the vegetables planted. This effort, however, was not a lost cause. Instead, this provided insight to the dining facilities team on how to move forward with the same project for the summer of 2015 (J. Lewis, personal communication, February 20, 2015). Unfortunately, after the interview with Jon Lewis took place, the initiative for the summer of 2015 was postponed due to construction needs.

Southern United States

Clemson University

Located in Clemson, South Carolina, Clemson University is home to the Calhoun Field Laboratory [CFL], and is an eighty-acre plot of land on Clemson University campus. The university's founder, Thomas Clemson, gave this plot of land along with 814 acres when the college was created. A Master Plan was created to protect CFL from being utilized for certain developments. CFL land only permits agricultural projects by graduates and undergraduates to be conducted. In fact, the Master Plan also states that the Jaeger Company (located in Atlanta) was brought on to develop the use of the CFL site specifically to be an agricultural showcase ("Student Organic Farm at Clemson University"). CFL not only teaches the students, but also provides a public outreach program, to ensure the community learns about sustainability as well.

The Student Organic Farm [SOF] was started in 2001 on the CFL land, expanding almost 15 acres ("Student Organic Farm at Clemson University"). The purpose of the garden is to provide an environment suitable for experimenting and demonstrating sustainable farming systems. Their mission is to explore more profitable and environmentally friendly farming practices through research, education, and public service. Students have the ability to gain knowledge on what is ecologically, economically, and socially sustainable, as well as how to strengthen and grow the food systems in their community. There is no specific discipline that teaches and works on the farm. Instead, SOF is open to a multitude of faculty and staff from all different colleges on campus. At Clemson, they have found that it takes an in depth, planned out agricultural system to be able to run a farm. Students do not only work as the production crew; they are also responsible for the management of the garden, as well as the marketing necessary for SOF. This work comes from both graduate and undergraduate students that are interested. In addition to students running SOF, they also helped to create the Student Organic Farm Advisory Committee in 2007 ("Student Organic Farm at Clemson University"). This committee is

comprised of not only students, but also the faculty and community members that have an invested interest in the garden and its success. This council was created in partnership with parties in the area interested in the project. These partners, as well as the advisory committee, will help determine the direction SOF goes in the future ("Student Organic Farm at Clemson University").

The SOF was deemed an entirely organic farm in 2005 ("Student Organic Farm at Clemson University"). They pride themselves in refraining from the use of any synthetic fertilizers and pesticides. There are numerous classes and training programs conducted by SOF that are offered to both students and community members to learn more about organic and sustainable growing. SOF is also home to a greenhouse entirely operated in organic principals devoted to the transplantation of plants to the field and to the farmers markets. SOF grows a multitude of products including: seasonal vegetables, cut flowers, small fruit, and culinary herbs. Many of these are sold through Campus Supported Agriculture [CSA] and local farmers markets. The CSA was created in 2002 as an effort to reach public interest ("Campus Supported Agriculture (CSA) Market Program"). Members of the community as well as students can buy shares of the SOF plots. This allows members to be able to obtain weekly produce and cut flowers, which are produced on the farm. Shares are enticing to individuals because they are well under the market value price and sold at $25.00 compared to $39.55 per week. Members are also able to add on a fruit shares for the summer for an additional price ("Campus Supported Agriculture (CSA) Market Program").

Additional funding for CFL and SOF comes from the Rainwater Collection Pavilion ("Facility Usage"). This outdoor space can be rented for a multitude of different events. The pavilion overlooks the gardens. Following the same patterns of sustainability as the rest of the

CFL project, this facility helps to collect a maximum of 1500 gallons of rainwater, which can be utilized in the surrounding landscape ("Rainwater Harvesting System,"). The efforts at Clemson University have an effect not only on surrounding university projects, but also the life of the outside community as well.

Duke University

The Duke Campus Farm [DCF] in North Carolina was just recently founded in 2010 ("Home"). The farm is currently only one-acre large, however, there are many plans to expand the farm in the future. DCF is attempting to make positive changes in the community. To achieve this, they are promoting change in the way we eat, how we grow food, and even how we think about food. Part of the funding for the farm comes from an approved budget given by the university ("Duke Campus Farm: Five Year Strategic Plan"). Other funding has come from grants provided as well as fundraising efforts.

The mission of the Duke Campus Farm is to inspire and empower the Duke community to catalyze food system change ("Duke Campus Farm: Five Year Strategic Plan"). To achieve this mission, Duke has five strategic imperatives: educate, engage, empower, energize, and enable. They look to *educate* students by increasing their food literacy. *Engage* the student body in hands-on experiences that promote sustainable growth and food systems issues. By facilitating critical knowledge and conversations they are *empowering* an action for change. *Energize* is implemented by connecting individuals, groups, and the community together for a common cause. Teaching and research for these concepts are *enabled* by providing a living lab: the farm. By teaching these concepts, the goal is for every student on Duke campus to graduate as an informed food consumer with the ability to spark change wherever they go.

To implement this plan, Duke University is devoted to working with numerous classes across their campus ("Home"). Not only do they work with enrolled students, they also work alongside community members to broaden the range of their impact. Many of the classes help those in attendance to learn how to grow their own food sustainably, as well as the impacts that food systems can have on the environment. Located on the farm is a pavilion that has often been utilized for classes, workshops, and even small events ("Duke Campus Farm: Five Year Strategic Plan"). The goal of working alongside a multitude of different disciplines is to eventually integrate the academic departments to all take an interest in the farm. Duke has also implemented many core programs to bring more interest to DCF. There are educational workshops that provide lessons regarding preserving, fermenting, foraging, and juicing. Alternative Spring Break is a program provided to teach the students of Duke about the politics behind the process of popular farm-to-fork initiatives. Demonstration Gardens are also devoted to educating the community as well as food-centered orientation programming. The food produced on the Duke Campus farm is sold through Community Supported Agriculture programs [CSA] ("Summer CSA is here!").

Northeastern United States

Yale University

The concern revolving sustainability affected Yale University's campus—located in New Haven, Connecticut—starting in 2000 ("Yale University"). A group of students in a class that prompted awareness on the impacts of what pesticides have on the environment and human health led to concern on what was sold in campus dining halls. The concern of the students led to the university switching many of their dining products to organic items. The students then began

an organization known as *Food from Earth*, which further raised awareness and support for the organic food movement in the dining halls.

These efforts were not enough for the students. Along with the prompting of Alice Waters, a famous restaurant owner and Yale parent, the students began to push not only for sustainable dining measures, but also the need for a campus farm, a form of composting, and additional education regarding sustainable food measures ("Yale University"). By 2003, a steering committee created the *Yale Sustainable Food Project* and their vision for the initiative. This initiative would start the campus garden, continue promotion for sustainable dining, as well as create educational programs regarding agriculture and sustainability. By that summer, ground was broken for the Yale farm and composting had begun. They were able to also harvest their first vegetable crops, which were sold at the local New Haven farmers market.

Yale now has two separate farms where they grow a menagerie of produce and plants. The Yale farm, located on the central campus, covers one acre of land ("On The Farm"). A range of volunteers from undergraduate and graduate students, to Yale faculty and staff, as well as New Haven community members helps maintain the garden. There are weekly workdays posted so volunteers know when they are needed. The subject of what happens during the summer is a tricky topic for all campus farms. At Yale, they created six undergraduate farm internships. The interns help out on the farm during the summer break months, while continuing their education on agriculture and food systems. The Yale Farm runs all 12 months of the year. They produce a wide range of vegetables, herbs, berries, and fruits as well as flowers, fiber, and fuel crops. The farm also raises honeybees and poultry flock. To maintain sustainable practices on the farm, students monitor the nutrient flows in the soil to ensure productivity. The second farm is the West Campus Urban Farm. This farm is open to the entire community, encouraging growing and

learning opportunities. This farm is also run twelve months out of the year, growing different seasonal vegetables, herbs, and fruits. The West Campus farm is also a hub for Yale to conduct scientific research and much of their educational programming ("On The Farm").

Yale University is committed to encouraging sustainability. Their mission is to have their students, as well as community members, grow to be food literate leaders ("Mission"). Their mission is achieved by encouraging those on the farm to think creatively and critically to solve problems. The farms also allow for research on the need for sustainable food systems. Both farms also allow for interdisciplinary learning for all disciplines that can be related to food, agriculture, and/or sustainability ("Yale University"). There are currently twenty courses on campus offered each semester that relate to food and agriculture ("In the Classroom"). In fact, over one thousand students are enrolled in these classes each semester.

Yale has continued to utilize their farms to attract students as well as locals to become involved. Many festivals and events have been held on the farm locations ("Yale University"). These events have helped to spread awareness about the farms. In 2005, a wood-fired hearth was built on the Yale Farm to be utilized for cooking and baking. The hearth has been utilized for bread baking workshops hosted by the university. Other workshops include fruit preserving, winter growing, and also pruning.

University of New Hampshire

The University of New Hampshire is one of the oldest college farms. Their program is known as the New Hampshire Agricultural Experiment Station [NHAES]. As far back as 1862, the university adopted the Morrill Land-Grant College Act ("Background and History of the NH Agricultural Experiment Station"). A few years afterward, in 1866, the New Hampshire College

of Agriculture and Mechanic Arts was created as an offshoot of Dartmouth. Eventually the land was given to the state, and in 1887 the NHAES was established. The University of New Hampshire would then provide funding for research, as well as help to teach and engage students in sustainable agriculture, forestry, environmental science and rural communities.

The mission of the NHAES is to undertake research towards a food system that produces, processes, and delivers food, fiber, forest products, and a myriad of environmental services for all citizens ("NHAES Mission Statement"). This mission insures that environmental quality is protected, as well as addressing short and long-term needs of the community. The mission statement also addresses five of the goals of the NHAES. The primary goal is to create an agricultural system that is highly competitive in the global economy. The goal of providing a safe and secure food and fiber system directly relates to the next goal of providing for a healthy and nourished population. Agricultural systems that protect natural resources and the environment will in turn help to enhance the economy and quality of life.

The NHAES operates and maintains research facilities while also providing forage, forests and woodlands for the purpose of research, teaching, and outreach ("New Hampshire Agricultural Experiment Station"). One of these facilities, located on 155 acres on the western edge of campus, is the Woodman Horticultural Research Farm. The Woodman Farm ("Woodman Horticultural Research Farm") is home to an equestrian cross country course, as well as many horticultural and ornamental crops. Classes taught here regard forestry, wildlife biology, entomology, and water quality. A multitude of research projects are also conducted on this land. Some of these projects include the integration of pest management, high tunnels to help hasten the growing season for strawberries, the use of reflective mulches to increase tomato yields, hull-less pumpkin seeds for healthy snacks, and shrubs for niche markets.

The Kingman Farm is located on a 360-acre property in Madbury, New Hampshire, only two miles from the Durham campus ("Kingman Farm"). The site is mainly utilized for research purposes on horticultural and agronomic crops as well as wildlife management. Other research projects include the Great Bay Oyster Renovation Effort and forages for dairy and equine programs. The Kingman Farm is also home to the university's composting facility. Demonstrations of new information are given at the farm for growers as well as any members of the public. There is an abundance of space on the farm for the community to partake in hiking and mountain biking as well.

Seven miles away from the Durham campus, in the community of Lee, is the Organic Dairy Research Farm ("Organic Dairy Research Farm"). The Organic Dairy Research Farm includes three hundred acres of land. Of the 300 acres of land, 120 acres are woodlands, 140 acres are utilized for crop production, and the last 40 acres are utilized for pastures. The dairy farm consists of an integrated agroecosystem that includes biological, physical, and human related components. There is also research that takes place on the farm in a variety of different disciplines. The Organic Dairy Research Farm operates under both organic and conventional farming standards.

The Fairchild Dairy Teaching and Research Center is home to the Cooperative for Real Education in Agricultural Management [CREAM] ("Fairchild Dairy Teaching and Research Center"). This facility has 87 cows of milking-age. In addition to those cows there are also seventy other cows that are raised as replacements when the milking cows no longer produce milk. Student labor is needed to help run the dairy center. Forty students are used every academic year to help produce the 26,000-27,000 pounds of milk produced per cow per year. The Fairchild

Dairy Teach and Research Center has brought home many awards and recognitions to the university.

The Macfarlane Research Greenhouses accommodate 25,000 square feet of building space and are located on the main campus ("Macfarlane Research Greenhouses"). The greenhouses are utilized for research and teaching opportunities. The space provides a highly controlled environment for research projects. Some projects include ornamental and food crop breeding, sustainable ornamental plant nutrition, pest control, bioremediation, and plant genetic diversity in strawberries and mint. The greenhouses are all monitored through a computer-based control system that helps to sustainably conserve heat, electricity, water, and fertilizer. The Macfarlane Research Greenhouses are also used for many teaching and outreach for the local community members and horticultural professionals to learn and talk about awareness of local, sustainable horticultural production. Visitors are also drawn to the greenhouses for the diverse plant life as well as a small fishpond.

Western United States

University of California, Santa Cruz

Located in California, UC Santa Cruz has had farming programs since 1967 ("About the UCSC Farm & Garden"). Their program is known as The Center for Agroecology and Sustainable Food Systems [CASFS]. UC Santa Cruz contains two separate farms: UCSC Farm and the Alan Chadwick Garden. Both these plots of land are internationally known for their training, research, and public educations pertaining to organic horticulture and agriculture. The land at UC Santa Cruz has also achieved organic certification in accordance with the California Organic Foods Act of 1990 as well as the National Organic Program. UC Santa Cruz is also among one of the first farms to be certified by the California Certified Organic Farmers.

Residing on a three-acre plot of land, the Alan Chadwick Garden was founded in 1967. Although this garden many not include much land space, it is a model for small-scale agriculture and horticulture. A French-intensive biodynamic farming method is utilized, which includes the close spacing of plants, located in raised beds. This style allows for maximum soil aeration and drainage, as well as careful use of organic fertilizers. There is a large variety of crops produced on the land: ornamentals, annual and perennial food crops, and native California species. There are also 120 different varieties of apple trees located on the Alan Chadwick Garden.

The larger of the two farms, the UCSC Farm, was started in 1971 on a twenty-five acre plot of land. The UCSC Farm is home to the offices of Lab Life, which is responsible for developing garden-based science and nutrition curricula for different elementary schools. They also hold many garden classrooms at the farm. These classrooms act as model garden and training sites for students and teachers all throughout California. There are also programs geared specifically for the younger pre-school through high school students. Similar to the Alan Chadwick Garden, The UCSC Farm also grows gardens filled with annual and perennial foods as well as ornamental crops. The land also provides orchards, bush berries, windbreaks, and multiple research plots. Raw crops grown there are then cultivated with use of a tractor. Additionally, the UCSC Farm houses and agroecology lab, multiple greenhouses, as well as classroom and meeting spaces.

Since the first farm started on the campus in 1967, much of the help in maintaining the land has been done by student apprenticeships ("About the Apprenticeship"). To become an apprentice, one must first complete a six-month training course, which runs from April to October. This apprenticeship helps to have hands on experience during the summer, while also providing much needed information to future apprentices. The purpose of the training is to help

educate future organic farmers and gardeners. Much of the instruction and daily work given to the student apprentices regards not only the plants, but also the soil, climate, insects, and possible pathogens. The apprentices work mainly in the greenhouses, gardens, fields, and the orchards. Running the CSA program, as well as any other direct marketing projects, is another job to be run by students. These programs and projects help to increase awareness and emphasis on the social justice aspects involved with food systems such as labor and distribution ("History of the Apprenticeship"). When the apprenticeship is over, the students leave with the ability to run and maintain their own organic farms.

University of California, Davis

UC Davis, which is also located in California, has had a student run farm for thirty-eight years, it's farm started in 1977 ("About the Student Farm"). The farm is utilized by not only the faculty and students, but also local farmers, gardeners, and primary school children. Along with the student farm, UC Davis also is home to the Russell Ranch Sustainable Agriculture Facility as well as the Market Garden. There are three principles implemented on the student farm: to have a focus on sustainable agriculture principles and practices, to emphasize experimental learning, and to encourage students' initiatives, creativity, and exploration. For students who want to immerse themselves into the field of sustainable agriculture, UC Davis provides opportunities for internships, formal courses, and research projects.

The Russell Ranch Sustainable Agriculture Facility is primarily used for agricultural research ("About Russell Ranch"). This space is located near campus, and totals 300 acres. Students have the opportunity to visit the facility on field days, field trips, internships, and graduate student research. A large project on the Russell Ranch is an investigation of irrigated

and dry land agriculture in a Mediterranean climate. There are also many Long Term Research in Agricultural Sustainability [LTRAS] projects. One of these includes a 100-year study on seventy-two one-acre plots of land. The purpose of this project is to monitor the changes in crop and soil property. This is accomplished by looking at the long-term impacts that crop rotation, farming systems, inputs of water, and other elements have on agricultural sustainability.

The Market Garden is located on the original Student Farm ("Market Garden"). This market was started shortly after the Student Farm in the 1980s and is seven acres in size. The Market Garden is able to continue its efforts through grant funding. Many of these grants come from the Organic Seed Alliance, Seeds of Change, Johnny's Selected Seeds, and the USDA ("Market Garden"). The Market Garden produces crops year-round with the help of student volunteers, interns, employees, as well as the Organic Crop Production class. There are also hired on-campus farmers who work in the market for both fall and spring semesters. Organic vegetables production and marketing at the garden includes a greenhouse to grow and transplant the seeds, direct seeding and transplanting, field preparation, irrigation and cultivation, pest management, as well as harvesting, packing, and selling at market. Summer seasons can at time pose a problem for campus farms. At UC Davis, both students and non-students help to manage the land. Student apprenticeships, as well as help from students who stay on campus for summer session classes accomplish land management for the summer.

Crops produced on all the farm plots are sold and utilized in many different facilities. Much of the produce is used on campus at the dining facilities as well as the on-campus coffee house ("Market Garden"). Produce is also sold at the farmers market as well as at the student harvest. Community members also have access to buying vegetable basket subscriptions through CSAs ("Vegetable Basket Subscriptions"). The faculty, staff, and students have the ability to

subscribe to a CSA to obtain a variety of fresh produce each week. Many are drawn to not only the fresh produce, but also the different varieties that come in each basket every week as well as each season.

Midwestern United States

Michigan State University

In 1999, when Michigan State University [MSU] students from different horticultural classes decided they wanted to start applying the skills they learned, the plans for a student run farm began ("History of the Farm"). The students went on to build three solar greenhouses, and by 2002, the first production season commenced. The Student Organic Farm [SOF] now sits on 15 acres of land and is certified as an organic farm ("Welcome to the MSU Student Organic Farm"). Because of the long winter months, yearlong production is often difficult. However, MSU solved this dilemma by utilizing the original greenhouses, as well as building hoop houses. These facilities provide space to grow wintergreens and storage crops to sell for full shares in the winter.

Michigan State University provides many courses tying back to the farm for their students to participate in. Not only do these courses teach organic farming, but they also provide research opportunities for the students as well. For nine months, students can partake in an Organic Farmer Training Program [OFTP] to learn more about organic farming and the production of vegetables. This program puts an emphasis on farm management, skills, and knowledge ("Organic Farmer Training Program"). They not only help to manage the 15 acres of land, but they also help to maintain the 20,000 square feet of greenhouse space. Their daily work also includes workshops, lectures, readings, and assignments to help build their knowledge. The program helps to prepare students for careers in organic farming, urban agriculture, community

gardening, and many other sustainable careers. The OFTP students are not the only students helping to maintain the farm ("Welcome to the MSU Student Organic Farm"). The SOF Farm Crew and student volunteers are also crucial to running the farm.

With year round productions, MSU is able to have year-round teaching and production on the farm. Many of the crops produced include vegetables, fruits, herbs, and flowers ("Organic Farmer Training Program"). MSU also grows select livestock on their farm. Some of the produce is sold on the campus dining halls, while others may be sold in a local farm stand ("Welcome to the MSU Student Organic Farm"). MSU also utilizes CSAs. In fact, they provide 65 CSA shares during the school year, and one hundred CSA shares in the summer ("Community Supported Agriculture"). MSU was the first to implement a year-round CSA program in the state of Michigan.

College of the Ozarks

Point Lookout, Missouri is home to the College of the Ozarks. The vision of the College of the Ozarks [CofO] is to develop citizens of Christ-like character who are well educated, hard-working, and patriotic ("College of the Ozarks"). The school has the nickname Hard Work U because the students are not required to pay tuition. Instead, students work at different locations on campus to earn their stay at the college. This allows all the students to develop character and have the opportunity to graduate without debt. At CofO they have seven different work locations on and around the campus that specifically pertain to agriculture and student farming ("Farms & Work Stations").

In the summer of 2013, the student run farmers market was created. The motto for the farmers market is to sell all things that are student made and grown. It takes about eight to twelve

students each semester to help run the farmers market. The campus gardens provide all the vegetables for the farmers market. Other products that can be bought at the Farmers Market include: milk from the dairy farm, meats from the beef farms, homemade bread, jelly kitchen items, bedding plants, and hanging baskets. Soon the market will also begin selling honey from their new bee project.

There are seven locations all within a 24-mile radius of the main campus that comprise the CofO beef farms. The farms require the work from around seven to nine students for each individual farm. In all there are about two hundred cattle on the farms. Students who work the beef farms are provided with the knowledge and experience of running their own beef cattle operations. Responsibilities of the student workers include health of the cattle, nutrition, breeding, merchandising, and facility maintenance. Students are also required to manage the forage production as well.

Similar to the beef farms is the hog farm. This farm takes over 154 acres of land in total. Only five to seven students are required to manage and maintain the property. Their main tasks include hog raising, cow-calf production, pasture grazing, as well as forage production. The students learn to manage and work with about twenty to 25 swine at a time. They also help to maintain the piglet nursery to raise into sow. The meat from the hog farm is in turn sold at the Farmers Market for a profit.

The Processing Plant teaches students how to work with the meat that is provided by the beef and hog farms. The Processing Plant has been USDA inspected and approved. It requires 11 to 12 students to work at the Processing Plant. These students learn all the steps of the meat industry from the harvest to the finish product. Each year, the students help to harvest between 10 to 24 beef cattle as well as around 200 to 300 hogs. The meat is made into wholesale and

retail cuts of meat. Some of the meat is then fully cooked or heat-treated into a variety of different products. The dining halls, farmers market and fruitcake and jelly kitchen utilized these cooked products such as smoked hams, back, pork chops, pork ribs, snack sticks, summer sausage, ham hocks, and turkey jerky.

Located on the main campus is the CofO dairy farm. This farm requires the most amount of student labor in the agriculture department at around 30 to 36 students a semester. These students are in charge of feeding, haying, milking, ensiling, calving, cleaning, and giving general maintenance to the cows and the farm. The student workers gain knowledge in nutrition, health, reproductive physiology and farm management. There are about 50 to 60 cows that produce milk on the dairy farm. The milk is then processed and bottled to be sold to the faculty, staff, and students at the Farmers Market. The dairy farm is also home to the agricultural education program's tourists and visitors.

Students learn the skills of creating feed at the CofO feed mill. It takes about five to six students to run the mill. The students both make and deliver the feed to all areas of livestock production for the college. They also utilize a truck to deliver feed to other various farms around the community. Students working on the farm learn the entire process of feed making, from the machinery used to the grinding, rolling, and mixing of the corn and grain to make feed. The student workers are also in charge of taking care of crops, controlling the inventory, and maintaining a service oriented attitude.

The last workstation in the agricultural department at the CofO is the horticulture lab, orchard, and garden. The horticulture lab works with not only agriculture, but also landscaping, hotel and restaurant management, the farmers market, and education for any dining customers. The lab is home to the tissue culture laboratory, which has a micro-propagation of a variety of

different horticultural crops. They also test a variety of methodologies and media compositions to research the effective and usefulness in the agricultural industry. This lab grows fruit crops, as well as seasonal vegetable crops. Students who work here learn how to prune, irrigate, fertilize, harvest, test soil, and control weeds and pests. Recently they've also started working with honeybee hives to produce honey.

Berea College

Located in Berea, Kentucky, Berea College has an incredibly unique approach to the way they run their college since 1855. There is no tuition at Berea. Instead, only students with high academics are admitted ("About Berea College"). The College is able to afford this type of admissions by enforcing all students to work on campus for a minimum of 10 hours a week.

Berea established the Sustainability and Environmental Studies Program (SENS) in 1999 to help promote sustainability campus wide ("Sustainability and Environmental Studies"). The SENS program is arguably what Berea College is most well known for. The Berea College Ecovillage is home to one and a half acres of land. This ecovillage is home to the SENS house: a residence that has been ecologically designed. The apartments were built with elements such as energy-efficient appliances, and recycled materials, as well as efficient use of shade and ventilation. These apartments not only provide housing to students, they also teach the students how to live a sustainable lifestyle. The residents are required to recycle, as well as engage in a selection of sustainable projects. Some of these projects may be as simple as carpooling, to activities such as making their own green cleaning supplies. In addition to the apartments The SENS program also has edible landscapes, an aquaponics facility, and even a permaculture food forest. The aquaponics facility was created in 2009 ("Jackson L. Oldham Aquaponics Facility").

This agricultural system integrates aquaculture and hydroponics. The combination of these two systems allows the aquatic fish to provide nutrients for the plants that are grown. This allows for maximum efficiency of use of water and nutrients. The aquaponics system houses tilapia and catfish, as well as grows oregano and basil. The fish tanks are heated with solar panels, and use rainwater that has been collected. There are nine students the Berea's SENS program that work to operate all these facilities, as well as provide school and community outreach.

In addition to the ecovillage, Berea also owns 8,000 acres of land for a college forest. This forest is home to numerous steams, reservoirs, and ponds. Many of the SENS classes, internships, and projects are also located in the forest. Berea's Sustainability and Environmental Studies program is not limited. Students and faculty from social sciences, sciences, and the humanities all engage in sustainability on campus. In 2010, Berea also adapted a Community Sustainability Laboratory (CS-Lab) ("Community Sustainability Lab (CS-Lab)"). This program examines curriculum and programs on campus and then will restructure to provide more sustainability practices. The SENS program is not the only program involved in the CS-Lab, Technology and Industrial Arts (TEC) and Agriculture and Natural Resources (ANR) are part of the founding members. The CS-Lab will ideally be able to not only educate students and faculty on sustainable practices, but also help the community to become innovative with sustainability practices.

Along with the multitude of other sustainable efforts brought forth by Berea College, the SENS program has created a newsletter titled *The Sustainable Campus*. This newsletter is published three to four times a year, and provides the college and the community with updates regarding the college's sustainability efforts, as well as new feats in sustainability throughout the country. The college also has competitions for students living on campus. These challenges

include Recyclemania and Campus Conservation National (CCN) ("RecycleMania 2013"). Recyclemania is an eight-week program that promotes recycling campus wide. This program also helps to increase the percentage of recycling on campus by up to 40 percent. CCN is an electricity program that helps to focus campus awareness around the world. This challenge lasts three weeks, and Berea has placed top 10 in the nation for electricity reduction.

Lessons Learned From Established University Gardens and Farms

Sparking change among a university is no easy task. The students of Yale grew concerned about the environment after learning about damaging effects of improper food growth in a class. The student body greatly outweighs the numbers of faculty and staff in most, if not all, institutions. Students have the ability to initiate cause for change; however, it takes faculty support to convince the university.

The largest obstacle foreseen to creating a campus garden or farm is funding. There may be an abundance of land available to create a sustainable program; however, all projects require funding. Many avenues for securing funding are available, but a plan must be implemented first. None of the established farms mentioned in this essay were created in a day. An initial group must be passionate about creating a program, that group must then encourage others to join their initiative, and finally, the university must agree. Once a plan is created and the university has agreed, the university must create budgets, money may have to be reallocated, and some programs may receive less funding to accommodate for the new project.

The College of the Ozarks system, in theory, is brilliant. Money is saved in staff salary by having a student run university where the students work for their education. This will draw students who otherwise would not be able to afford an education. The planning, however, must be flawless. Every possible source of payment must be accounted for. With no money coming in

from tuition, the university must rely only on government funding, if there is any, grants and other outside funding. Yale University, and many other campuses also save money on labor by creating internship programs on the farms. These programs will not only count towards students' college credit and learning objectives, but it also helps with farm staffing. Information cannot solely be taught through lecturing. Students, through hands-on experience on the farms, can gain a plethora of knowledge. Student work on a campus farm is beneficial to all parties involved.

It seems that most of the universities started simply, and then eventually grew to be home to the gardens and farms we see today. Almost all schools have created a farmers market for both students and the community. The produce grown on the farms is what supplies these markets. A farmers market will help to promote community awareness towards sustainability. Once community members are involved, the foundation is set for outside volunteer help, word-of-mouth advertisement, and an influx of more community involvement. A farmers market can also generate the flow of revenue after the initial investment. Once an initial garden has been harvested, and its produce sold, profits can help to expand the gardening projects. First, additional produce varieties can be planted, and then eventually new programs such as composting or raising livestock can begin.

Looking at many of these universities, the correlating, successful farms have been around for a number of years. The College of the Ozarks and Duke University has some of the newest campus farms. Once a farm becomes successful and starts running smoothly, attraction can be brought in through other resources. Many of the reviewed campuses have core curriculum that corresponds with the sustainable practices of the farms. The knowledge of how to run a successful farm has been passed on through dedication and hard work.

Not all the acreage utilized by farming practices is directly on the respective institution's campus. Many of these farms are actually divided into multiple farms. Although it may take a small commute for students to reach a farm off of the main campus, allowing off-campus farms opens up endless opportunities for growth. Institutions will have the ability to still buy and utilize land for farming, even after the main campus has expanded as far as possible. This will also keep community neighbors happy, refraining from campus encroaching on their land. Multiple farmlands can also open up the possibility for specialized farms. Soil in different areas can allow for a wide range of produce growth. Certain farms can also be utilized for livestock, or flowering plants. Many of the campus farms had pavilions or other spaces that allowed for events to take place. Utilizing farmland for this purpose will not hinder production; instead it will promote awareness. Outside community members will be able to receive first-hand experience of the gardens. Having an area open for events can also bring in extra revenue, which will in turn allow for future growth.

While first broaching the topic of sustainability, it appeared to me as though only those students in majors directly relating to sustainability were interested in creating a sustainable campus farm. Reviewing what other institutions have accomplished proves that sustainability affects all majors. The promotion of the environment not only has an effect in scholarly life, but in daily personal life as well. Whether we are in school or at home, we are eating, breathing, and completing a menagerie of tasks that are all affected by the state of our environment. Spreading education through all majors can help to protect the environment. Creating a student-run campus farm is not just a means for crop production; it is the promotion of a healthier lifestyle.

Creating student-run farms will eventually become a necessity for all institutional campuses. The importance for needing these features on campuses will eventually become a

strong deciding factor as to where students decide to choose to attend college. Eventually, those campuses without any form of sustainable programs will become obsolete. A campus farm is critical to promoting not only the future of the university, but the future of the planet as well.

Sustainability isn't a practice we should be teaching only at the higher educational level. These practices are integral for all members of society to learn. Renewable resources can only remain renewable when properly taken care of. If we are using our resources faster than we can replenish them, they are no longer considered renewable.

Much of the literature written about sustainable practices makes the call for students to learn all about sustainability before they reach the college level. Students need to be learning about how to maintain sustainable practices just as much as they need to learn their basic core curriculum. If a college campus does not have a sustainability program, and it is not a part of the curriculum for elementary, middle school, and high school, there will be few opportunities for individuals to learn about these practices.

Having a student-run farm will not only help educate those enrolled in the university, but the community will also have the opportunity to learn and become educated. Although a farm can drastically improve chances for education on the topic of sustainability, it is only a small piece of the puzzle. Just having a farm will not educate thoroughly, sustainable practices. It is crucial that classrooms incorporate sustainability into their daily schedules. Sustainability is not just about the upkeep of renewable resources, recycling and utilizing waste products. Sustainability is a lifestyle; it allows individuals to make their world a better place, instead of depleting its resources.

A barrier I have found within the planning for a student run garden or farm has to do with the farmers markets. The farmers markets have great potential for farm outcomes. These

programs can bring in individual community members to buy the produce, while still learning about why and how the produce is grown. The problem comes when a community already has a farmers market. Local farmers not associated with the university may start to lose business; business they my heavily rely on, because their customers go to support the university. This could cause tension between the community and the university.

A way to fix this problem is to create a farmers market that isn't only dedicated to the university and their production methods. Universities have the capability and the funding to spread the word about their farmers markets. By inviting other farmers markets to collaborate and join the university's market, local farmers will not lose the funding they may depend on for their livelihood. Associating with the local farmers can also help to learn new methods for how to run the university's farm. If willing, local farmers who practice sustainable methods can come to the university farm and introduce systems that weren't previously being utilized at the university. Additionally, if farmers invited to participate in the university farmers market aren't utilizing sustainable practices in their farming methods, this opens the opportunity for the students at the university to teach these practices to the local farms. In turn, not only will the university's farm be sustainable, but a pattern of sustainability will move throughout the community, making it a greener place to live.

Ball State University Proposal for the Future

There are many projects just recently started, or are in-process, regarding food and food systems all over campus and within the Muncie area. Sustainability efforts on campus have been in operation for over ten years, and a new minor is offered and a major is scheduled to be available to students shortly. A group, Council on the Environment (COTE) is made up of faculty, students and professional staff who organize projects on and off the Ball State Campus

with a focus on sustainability. One year ago, Dr. Deanna Pucciarelli, Dr. James Eflin, and Dr. Joshua Gruver, professors at Ball State University (BSU), were awarded an internal grant to build a coalition on campus for those who are interested in creating a campus food system program. In the spring of 2015, a food systems group was created to discuss how Ball State University should move forward towards student farming, and food systems in sustainability in general. Dr. Scott Truex, an urban planning professor, along with students from one of his classes, found a combined 141 acres of space on campus that could potentially be used for the growing of food. He and his students have also formulated a plan for portable growing pods that can be placed in empty parking spaces over the summer.

Ball State University owns eighty-three different properties that could be used for farming. This amount of land provides a wide range of potential use in regards to food systems. After researching and analyzing a range of different colleges in the four different regions of the United States, many ideas have formulated that we can adopt and recreate at BSU to start implementing a food system campus wide.

The first obstacle in creating a food system on campus is the problem of funding the projects. Student farms and gardens require funds to buy seed for the land, as well as help maintain the land. There are hopes that in the near future, Ball State University can obtain a USDA federal planning grant to revolve around the food system projects. The majority of the colleges analyzed also required grants to keep their projects running. Funds for other campus gardens had financial support from their respective universities. Once a garden is started, and the impact on the students and the community indicate a positive change it is easier to convince the university to provide additional funding to gardening and farming efforts. If word spreads about the plans of the garden, as well as the future impacts, many alumni would likely be willing to

give some funding. Events to advertise these opportunities to alumni and the business community can occur through my home department and program, Hospitality and Food Management, a program that specializes in event management. It is likely, however, that university support will be needed. This can be accomplished through proceeds from the dining services, or student tuition dollars who enroll in classes directly tied to the gardening and farming efforts.

A campus garden can be easily maintained during the school year when thousands of students are roaming the campus looking for work. The problem comes in the summer. Over half of the on-campus students leave campus during the summer months, and do not return until the fall semester (Lewis, 2015). There were a few institutions reviewed that created internships or apprenticeships over the summer to keep students working on the farm. These programs are beneficial to not only the land, but the students as well. Students can receive college credit and even a salary, if applicable, for helping to maintain the garden over the summer. Since BSU is located in the Midwest, the summer is one of the most crucial growing seasons. Sustainability and food systems can be linked to a wide variety of disciplines. Classes, awarding college credit, can also be created during the fall and spring semesters to add opportunities for individuals to work on the farm. This project may even be able to bring about a few new disciplines as well as strengthen old ones.

As stated, the Midwest is not known for year-round growing seasons. This can put a stop to a wide range of potential growth opportunities. Instead of limiting ourselves to the summer months, we can utilize greenhouses and hoop houses for year-round growth. The potential of greenhouses also allows BSU to have a wider range of crops that can be grown. The more crops we are able to utilize, the greater potential there is to have a CSA program on Ball State

University's campus. Not only will CSAs help provide funding, but the faculty, staff, students, and Muncie community will be able to have fresh produce and receive an education about sustainable practices as well.

Steady growth is the key to making a student farm a reality for BSU. A farm cannot be created in a day and be successful. The first step is to create a five-year plan to create the project. By creating one farm, the labor involved and funding can be projected for what it will take to have multiple farms. Once the first farm is successful, more farms, and possibly even farmers markets can be created, as we saw from other universities. In addition to vegetable and fruit growing, aquaponics or other types of farming can be initiated. Along the way classes for both students and the community can be implemented to spark interest. The Ball Brothers from the Ball Mason Jar Company have a long history with the university. Implementing education about the history of the canning industry and providing canning classes would not only be beneficial in highlighting the university's history, but it would also teach students new trades that have been lost. Eventually Ball State University may even have the means to start raising their own livestock.

Conclusion

It has become clear that most universities are on track to having a student run garden and/or farm in the near future, if they do not have one already. Campus farms are an integral learning tool for all students, regardless of major. The impacts these farms have on not only the students, but the entire community is crucial for progressive growth. Without these farms, there may not be a way for individuals to be introduced to sustainable practices. A campus farm can help introduce individuals to the ideals of sustainability, which will in turn only promote the need for more knowledge on the subject.

The colleges reviewed have food systems, both young and old, that are thriving. Much of this has to do with the involvement of students and staff. The fact that some of these farms have been around for over one hundred years, and others are as recent as five years ago, it proves that a successfully run farm can last throughout many generations. This includes the access to decades worth of knowledge from all individuals who come into contact with the farms. This can bring about new innovative techniques and teachings for the future of sustainability.

Ball State University has all the tools to create a successful campus farm. There are faculty members who are willing to dedicate their time to enlightening the students about sustainability. A grant has already been funded to help the initial steps towards beginning a food system on the campus. Students are pushing for a way to promote sustainability on campus as well. Many majors are already integrating sustainability into their curriculum. The land is already available for utilization, and plans are in development. Together, these factors can act as a catalyst to the start of an enduring future for campus farming.

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